

(13), comprising a first wall (22) fastened to a current conducting element (16a); a second wall (13b) configured to be releasably fastened to the brush; a sidewall (21) lengthwise extending in an axis direction of the brush and cooperating with the first and second walls to form a volume defined by the first wall, the second wall and the sidewall; and a fluidic medium (23) contained in the volume and configured to apply an approximately constant pressure to the brush. Applicant would like to point out that the configuration of the invention set forth in the Dobbing patent and the present invention are very different. Dobbing discloses a cross-sectional donut-shaped brush holder having an inner and outer bellows and a central bore through which a bolt is inserted.

Also as the Examiner points out Dobbing fails to disclose an electrical brush holder having an electrical flexible cable composed of a plurality of ultra-fine metal fibers configured to establish electrical contact between the brush and the current conducting element and to conduct current between the current conducting element and the brush. Dobbing discloses and electrically conductive means comprising a bolt. Ultra-fine fibers are not used in the Dobbing invention nor does Dobbing suggest the need to use such fine fibers.

Using a bolt as an electrical conductor would be similar to using a spring in that both would yield high electrical resistances. As noted in the present application, such conductors would work well at very low temperatures, but not at room temperature as practically needed. Dobbing itself discloses in column 1, lines 43-47 and column 2, lines 50-57, the step of cooling the flexible housing, which directly teaches away from the present invention by requiring cooling as an acceptable step of the brushing method. The combination of the ultra-thin fibers with the fluidic means disclosed only in the present invention eliminates the need for any cooling step.

Further the present invention is directed to an electrical fiber or foil brush which is not disclosed by Dobbing. Dobbing is specifically directed to "a brush composed for resilient fibers".

The Examiner cites J. Gordon as teaching the construction of a master cylinder (34) on a hydraulic actuated brush holder (10) for the purpose of providing a fluid means for maintaining and urging the brushes of a dynamoelectric machine against their commutator with a constant and equal force, and a lead (23) attached to the brush head (14a) for the purpose of connecting the brush head to an outside electrical source. While the Gordon does disclose the use of hydraulics to control brush forces, neither Gordon nor Dobbing provide for the option of using a combination of liquid metal and a pressurized gas as does the present invention. Further, Applicant sees no motivation to combine these references given that Dobbing is complete in using liquid metals, while Gordon is complete in using hydraulics, and neither suggest the need for using ultra-fine metal fibers or a combination of liquid metal and pressurized gas.

The Examiner asserts that Dobbing et al. discloses an electrical brush holder wherein the fluidic medium comprises a gas and a liquid metal and labels the inner bellows of the Dobbing invention as the gas. Applicant respectfully asserts that Dobbing does not disclose using any kind of gas and further does not suggest the need for the use of a gas.

The Examiner also asserts that Gordon discloses an electrical flexible cable (25) composed of a plurality of ultra-fine metal fibers configured to establish electrical contact between the brush and the current conducting element and to conduct current between the current conducting element and the brush. Applicant respectfully disagrees with this assertion. Applicant cannot locate a flexible cable 25 in the Gordon patent. If the Examiner is referring to lead 23, Applicant disagrees with the Examiner because the lead is not disclosed as a plurality of

ultra-fine metal fibers as disclosed in the present invention.

Applicant asserts that it would not have been obvious to one having ordinary skill in the art at the time the invention was made to use an electrical cable that comprises a plurality of solid metal filaments, since it was known in the art that a "stranded" cable is in fact a electrical cable that comprises a plurality of solid metal filaments. As the Applicant notes in the specification of the present invention, only cables comprised of ultra-fine fibers are acceptable as ordinary cables were found to have the same negative properties as the springs which the current invention is purposely avoiding.

The Examiner asserts that Dobbing et al. in view of Gordon discloses the claimed invention except for an electrical cable that comprises a plurality of solid metal filaments, each having an average diameter of less than 51, 41 and 11  $\mu$ m, but that it would have been obvious to those skilled in the art to use such filaments. Applicant disagrees with the Examiner's assertion that Dobbing and Gordon disclose the claimed invention at all for the above stated reasons, and therefore considers this rejection moot.

With regards to the remaining assertions set forth by the Examiner, namely:

With regards to claim 12, Dobbing et al. discloses an electrical brush holder wherein the first wall (22) is fastened to the current conducting element (16a) via a screw (14).

With regards to claim 13, Dobbing et al. discloses an electrical brush holder wherein at least part of the sidewall comprises at least one of 1) spiral tubing, 2) telescoping tubing, 3) accordion pleated bellows, and 4) flexible plastic sheet material.

With regards to claim 17,3. Gordon discloses an electrical brush holder with rigid tubing (28) surrounding the sidewall and configured to guide the second wall in the axis direction of the brush (14) as shown in Figure 4.

With regards to claim 19, Gordon discloses an electrical brush holder wherein the cable comprises electrical connectors configured to connect the cable to an electrical device as shown in Figure 4.

With regards to claim 20, Dobbing et al. discloses an electrical brush holder wherein the brush is permanently fastened to the second wall.

With regards to claim 21, Dobbing et al. disclose an electrical brush holder wherein the brush is releasably fastened to the second plate via a screw (14).

With regards to claim 25, Dobbing et al. discloses the claimed invention except for a third wall fastened to another brush. It would have been obvious to one having ordinary skill in the art at the time the invention was made to add a third wall fastened to another brush, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art.

With regards to claim 26, Dobbing et al. discloses an electrical brush holder wherein the pressure applied to the brush is substantially constant.

With regards to claim 27, Dobbing et al. discloses an electrical brush holder for applying a mechanical force to an electrical brush (13), comprising:

A chamber defining a volume and having a moveable wall (13b) to which the brush is fastened; and

a fluidic medium (23) contained in the volume and configured to apply a pressure to the brush via the moveable wall.

With regards to claim 28, Gordon discloses an electrical brush holder wherein the electrical cable is enclosed within the volume or at least partly located outside the volume as shown in Figure 4.

With regards to Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dobbing et al. in view of Gordon as applied to claims 1-10, 12, 13, 17, 19-21 and 25-31 above, and further in view of JP 02-181313.

With regards to Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,071,795 to Dobbing et al. in view of Gordon as applied to claims 1-10, 12, 13, 17, 19-21 and 25-31 above, and further in view of U.S. Patent No. 4,277,708 to McNab et al.

With regards to Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,071,795 to Dobbing et al. in view of Gordon as applied to claims 1-10, 12, 13, 17, 19-21 and 25-31 above, and further in view of U.S. Patent No. 4,355,709 to Light;

Applicant traverses these rejections in light of the fact that given the above remarks set forth against the basic combination of Dobbing et al. and Gordon, the remaining rejections by the Examiner are moot.

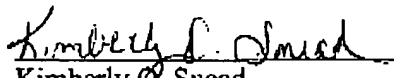
#### CONCLUSION

Applicant believes that in light of the arguments set forth above the rejection of the pending claims should be withdrawn. The combination of references cited by the Examiner does not disclose all aspects of the present invention nor does it render the invention obvious.

Respectfully submitted,

Date: December 4, 2002

By:

  
Kimberly C. Sneed  
Reg. No. 45,119

Parker & DeStefano  
300 Preston Avenue, Suite 300  
Charlottesville, VA 22902  
Telephone: 434-817-6606

Response to Office Action  
Serial No. 09/556,829

December 4, 2002  
Page 6